

**AMENDMENTS TO THE DRAWINGS**

The attached sheets of drawings include changes to Figs. 3, 4, and 8. The sheets, which include Figs. 3, 4, and 8, replace the original sheets including Figs. 3, 4, and 8. In Figs. 3, 4, and 8, previously omitted sequence identifiers (a SEQ ID NO) have been added.

Entry of the replacement sheets of Figs. 3, 4, and 8 is respectfully requested.

Attachment: Replacement Fig. 3

Replacement Fig. 4

Replacement Fig. 8

Annotated Sheet Showing Changes in Fig. 3

Annotated Sheet Showing Changes in Fig. 4

Annotated Sheet Showing Changes in Fig. 8

**REMARKS**

Claims 3, 6, 7, 10-12, 14, 16-26, 31, 32, 35, 36, 38-45, 50, 53, 54, and 56-63 are pending after entry of this paper. Applicants acknowledge that the restriction requirement mailed on February 12, 2008 has been vacated and claims 1-69 were considered on the merits. Claims 1-69 have been rejected. Claims 1, 2, 4, 5, 8, 9, 13, 15, 27-30, 33, 34, 37, 46-49, 51, 52, 55, and 64-69 have been cancelled without prejudice. Applicants reserve the right to pursue cancelled claims in a divisional or continuing application.

Claims 3, 6, 7, 10, 11, 12, 14, 32, 35, 36, 50, 53, and 54 have been amended to replace the term “shown in” with the term “of.”

Claims 6, 10, 11, 35, and 53 have been amended to delete the phrase “according to claim [###].”

Claims 6, 35, and 53 have been amended to delete the phrase “wherein the 2<sup>nd</sup> lysine is substituted by alanine.”

Claims 10, 12, and 14 have been amended to add the term “any one of the...”

Claim 10 has been amended to delete the phrase “wherein the 1 to 5<sup>th</sup> and 7 to 12<sup>th</sup> amino acid residues are substituted by alanine, respectively.”

Claim 11 has been amended to delete the phrase “wherein alanine is added/inserted to the N terminal of the amino acid sequence shown in SEQ ID NO: 3.”

Claims 19, 23, 40, 42, 58, and 60 have been amended to replace the phrase “being a conjugate of” with the phrase “comprising ... conjugated.” Claims 23, 42, and 60 have been further amended to delete the term “or” and the phrase “with a conjugate with.”

The dependency of claims 16, 17, 18, 19, 23, and 25 has been modified from “any one of claims 2 to 5” to “claim 3.”

The dependency of claims 38, 39, 40, 42, and 44 has been modified from “any one of claims 32 to 34” to “claim 32, 35 or 36.”

The dependency of claims 56, 57, 58, 60, and 62 has been modified from “any one of claims 50 to 52” to “claim 50, 53 or 54.”

Support may be found throughout the instant specification and the claims as originally filed. No new matter has been introduced by these amendments. Reconsideration and withdrawal of the pending rejections in view of the above claim amendments and below remarks are respectfully requested.

#### Response to Objections to the Specification - Sequence Compliance

The specification is objected to because the amino acid and nucleic acid sequences in the abstract are not associated with a sequence identifier (SEQ ID NO). Applicants have amended the abstract to clearly identify the sequence identifier of each mentioned sequence. Applicants respectfully request entry of the corrected Abstract on a separate page to replace the Abstract as filed. Reconsideration and withdrawal of the objection to the specification in view of the aforementioned amendments are respectfully requested.

#### Response to Objections in Specification

The specification is objected to because according to the Examiner the term “Expand Long Template PCR System” is a trademark and should be capitalized wherever it appears and be accompanied by the generic terminology.

Applicants respectfully submit that the term is used in accordance with MPEP guidelines with a <sup>TM</sup> marking (See page 42 of the specification), and the origin is clearly described, *i.e.*, Boehringer, thereby clearly showing that it is a trademark belonging to

Boehringer. Furthermore, applicants have amended specification at page 42 to read “Expand<sup>TM</sup> Long Template PCR System is composed of (1) an enzyme mix containing thermostable Taq DNA polymerase and Tgo DNA polymerase; and (2) a buffer,” thus providing a composition of the PCR system.

Applicants respectfully request reconsideration and withdrawal of the objection to the specification.

#### Response to Claim Objections

Claims 5, 10, 34 and 52 are objected to because the phrases referring to positions in the amino acid sequence are allegedly improper.

Applicants respectfully submit that claims 5, 34 and 52 have been canceled and claim 10 has been amended to delete the improper phrase. Therefore, applicants respectfully request reconsideration and withdrawal of the objection to the claims.

#### Response to Objections to the Drawings - Sequence Compliance

The drawings are objected to because the amino acid and nucleic acid sequences in Figures 3, 4, 8, 10, and 18 are not associated with sequence identifiers (SEQ ID NOs).

According to the Examiner, all sequences longer than or equal to ten (10) nucleotides or four (4) amino acids must include a sequence identifier (SEQ ID NO). Applicants respectfully submit herewith annotated and replacement Figure 3, 4, and 8, where each sequence is clearly identified with a sequence identifier. With regard to Fig. 10, applicants respectfully wish to direct the Examiner's attention to the fact that the nucleic acid sequences in Fig. 10 are less than ten (10) nucleotides long and do not require a separate sequence identifier in accordance with MPEP §2421-2422. With regard to Fig. 18, applicants respectfully submit that the specification has

been amended at page 20, paragraph 7, *i.e.*, figure legend of Fig. 18, to clearly identify DNA sequences as SEQ ID NO: 55 and SEQ ID NO: 56.

Applicants respectfully requests reconsideration and withdrawal of the objection to the drawings in view of the aforementioned remarks and replacement figures submitted herewith.

Response to Rejections under 35 U.S.C. §101/112

Claims 27-30, 46-49, and 65-69 have been rejected under 35 U.S.C. §101 for lack of utility and under 35 U.S.C. §112, second paragraph for being indefinite. Specifically, the Examiner contends that the instant method claims do not recite proper process steps (35 U.S.C. §101) and do not set forth positive steps involved in the method (35 U.S.C. §112, second paragraph) (Office Action – page 3). Applicants respectfully disagree.

However, in order to expedite prosecution and without disclaimer of, or prejudice to, the subject matter recited therein, applicants have cancelled claims 27-30, 46-49, and 65-69. Thus, the rejection under 35 U.S.C. §101/112, second paragraph to claims 27-30, 46-49, and 65-69 is moot.

Response to Rejections under 35 U.S.C. §112, first paragraph

Claims 4, 5, 8, 9, 13, 15-31, 33, 34, 37-49, 51, 52, and 55-69 have been rejected under 35 U.S.C. §112, first paragraph for an alleged lack of written description. Specifically, the Examiner contends that the instant specification allegedly does not provide support for the disclosed sequences with at least one amino acid, which is deleted, substituted or added (Office Action – page 4). Applicants respectfully disagree.

However, in order to expedite prosecution and without disclaimer of, or prejudice to, the subject matter recited therein, applicants have cancelled claims 4, 5, 8, 9, 13, 15, 27-30, 33, 34, 37, 46-49, 51, 52, 55 and 64-69. Thus, the rejection to these claims under 35 U.S.C. §112, first paragraph for lack of written description is moot. Furthermore, claims 16-26, 31, 38-45, and 56-63 have been amended to directly or indirectly depend from claim 3, 32 35, 36, 50, 53, and 54, which are clear of the instant rejection. Therefore, applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. §112, first paragraph rejection of claims 4, 5, 8, 9, 13, 15-31, 33, 34, 37-49, 51, 52, and 55-69 in view of the aforementioned cancellations and amendments to the claims.

Response to Rejections under 35 U.S.C. §112, second paragraph

Claims 6, 10, 12, 13, 27-30 have been rejected under 35 U.S.C. §112, second paragraph for alleged indefiniteness. Specifically, the Examiner contends that the phrase “the 2<sup>nd</sup> lysine” in claim 6 allegedly has no antecedent basis (Office Action – page 7). Moreover, the Examiner alleges that it is not clear which peptide is the parent peptide being substituted with alanine in claim 10 (Office Action – page 8). Furthermore, according to the Examiner, the recitation “titanium binding peptide comprising amino acid sequences shown in SEQ ID NOS” in claims 12-15 is indefinite for allegedly presenting multiple alternative interpretations (Office Action – page 8). Finally, the Examiner contends that the recitation “shown in SEQ ID:” in claims 3-69 allows for multiple interpretations, *i.e.*, the entire sequence or a fragment of the sequence (Office Action – page 8). Applicants respectfully disagree.

However, in order to expedite prosecution and without disclaimer of, or prejudice to, the subject matter recited therein, applicants have amended claim 6 to delete the phrase “the

2<sup>nd</sup> lysine is substituted by alanine;” amended claim 10 to delete the phrase “wherein the 1 to 5<sup>th</sup> and 7 to 12<sup>th</sup> amino acid residues are substituted by alanine, respectively;” amended claims 12 and 14 to recite “the binding peptide comprising any one of the amino acid sequences of SEQ ID NO.”; cancelled claims 13 and 15; and amended claims 3-69 to replace the phrase “shown in SEQ ID NO.” with the phrase “of SEQ ID NO.”

Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. §112, second paragraph rejection of claims in view of the aforementioned amendments to the claims.

Response to Rejections under 35 U.S.C. §102(b)

Claims 2, 16-24, 27-29, and 31 have been rejected under 35 U.S.C. §102(b) as being anticipated by Zreiqat, et al. (*J. Biochem. Mat. Res.*, 2003, 64A, 105-13). According to the Examiner, Zreiqat teaches a titanium binding peptide comprising a sequence of GGGGGC, and a functional sequence known to affect osteoblasts adhesion, GRGDSP, which allegedly meets the functional limitations of claim 2 that a peptide has to be capable of binding to titanium (Office Action – pages 9-10). Applicants respectfully disagree.

However, in order to expedite prosecution and without disclaimer of, or prejudice to, the subject matter recited therein, applicants have cancelled claims 2 and 27-29. In addition, applicants have amended claims 16-24 and 31 to depend from claim 3, which is clear of the present rejection. Therefore, this rejection is moot. Reconsideration and withdrawal of the rejections under 35 U.S.C. §102(b) of claims 2, 16-24, 27-29, and 31 as being anticipated by Zreiqat, et al. are respectfully requested.

Response to Rejections under 35 U.S.C. §102(e)

Claims 1, 2, 16-18, and 23-26 have been rejected under 35 U.S.C. §102(e) as being anticipated by Beyer, et al. (U.S. Publication No. 2006/0051395). According to the Examiner, Beyer teaches a method of screening phage display libraries for peptides that bind to titanium beads. The Examiner also contends that Beyer teaches titanium binding peptides obtained by the phage display screening method. Therefore, the Examiner alleges that Beyer anticipates the claimed invention (Office Action – pages 10-11). Applicants respectfully disagree.

However, in order to expedite prosecution and without disclaimer of, or prejudice to, the subject matter recited therein, applicants have cancelled claims 1 and 2. In addition, applicants have amended claims 16-18 and 23-26 to depend from claim 3, which is clear of the present rejection. Therefore, this rejection is moot. Reconsideration and withdrawal of the rejections under 35 U.S.C. §102(e) of claims 1, 2, 16-18, and 23-26 as being anticipated by Beyer, et al. are respectfully requested.

Response to Rejections under 35 U.S.C. §103

Claims 1, 2, 16-29, and 31 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Naik, et al. (U.S. Publication No. 2006/0035223) in view of Zreiqat, et al. (*J. Biochem. Mat. Res.*, 2003, 64A, 105-13). Specifically, the Examiner contends that Naik allegedly teaches a method of identifying and isolating peptides which can bind silica or other inorganic materials. The Examiner attempts to reach the claimed invention by combining the teachings of Naik and Zreiqat. According to the Examiner, Zreiqat allegedly teaches titanium-binding peptides and one skilled in the art would be motivated to combine the teachings from the



two publications to arrive at the phage display method that can be used to isolate peptides that bind to titanium disclosed in claims 1 and 2. Applicants respectfully disagree.

However, in order to expedite prosecution and without disclaimer of, or prejudice to, the subject matter recited therein, applicants have cancelled claims 1, 2, and 27-29. In addition, applicants have amended claims 16-26 and 31 to depend from claim 3, which is clear of the present rejection. Therefore, this rejection is moot. Reconsideration and withdrawal of the rejections under 35 U.S.C. §102(e) of claims 1, 2, 16-29, and 31 as being made obvious by Naik in view of Zreiqat are respectfully requested.

#### Dependent Claims

The applicants have not independently addressed all of the rejections of the dependent claims. The applicants submit that for at least similar reasons as to why independent claims 3, 6, 10-12, 14, 32, 35, 36, 53, and 54 from which all of the dependent claims 7, 10-12, 16-26, 31, 38-45, 50, and 56-63 depend are believed allowable as discussed *supra*, the dependent claims are also allowable. The applicants however, reserve the right to address any individual rejections of the dependent claims and present independent bases for allowance for the dependent claims should such be necessary or appropriate.

Thus, applicants respectfully submit that the invention as recited in the claims as presented herein is allowable over the art of record, and respectfully request that the respective rejections be withdrawn.

**CONCLUSION**

Based on the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application. Favorable action by the Examiner is earnestly solicited.

**AUTHORIZATION**


The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. **13-4500**, Order No. 4439-4039.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. **13-4500**, Order No. 4439-4039.

Respectfully submitted,  
MORGAN & FINNEGAN, L.L.P.

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By: \_\_\_\_\_

  
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